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#### **The Ecosystem Approach under the Convention on Biological Diversity: A Legal Research Agenda**

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# The Ecosystem Approach under the Convention on Biological Diversity: A Legal Research Agenda

*Elisa Morgera*<sup>\*</sup>

**Abstract:** The ecosystem approach can be considered the landmark regulatory strategy of the Convention on Biological Diversity and other biodiversity-related conventions. But legal scholarship is surprisingly thin with regard to the status and implications of the ecosystem approach. This article discusses the evolution of the ecosystem approach under the Convention on Biological Diversity, and analyses its inter-related components, including its role in ensuring mutual supportiveness among biodiversity-related conventions, as well as with international human rights law. The article concludes by identifying overarching legal questions for future research.

**Key words:** ecosystem approach, precautionary approach/principle, adaptive management, benefit-sharing, human rights, climate change, mutual supportiveness

This piece is being pre-published on SSRN (2015). It will appear in print as E Morgera, 'Ecosystem and Precautionary Approaches' in J Razzaque and E Morgera (eds), *Encyclopedia of Environmental Law: Biodiversity and Nature Protection Law* (EE, forth. 2016)

## 1. Introduction

The ecosystem approach can be considered the landmark regulatory strategy of the Convention on Biological Diversity and other biodiversity-related conventions. While it has played a growing influence in the further development of international biodiversity law, as well as in other areas of international law, legal scholarship is surprisingly thin with regard to the status and implications of the ecosystem approach. This article discusses the evolution of the ecosystem approach as a landmark regulatory feature of the Convention on Biological Diversity, and breaks it down into its inter-related components. To that end, the article also explores the interplay between the ecosystem approach and the precautionary principle, and the role of the former in ensuring mutual supportiveness among biodiversity-related conventions, as well as with international human rights law. The article concludes by highlighting overarching legal research questions concerning the ecosystem approach that await clarification.

## 2. The development of the ecosystem approach under the Convention on Biological Diversity

As the ecosystem approach as such does not find a treaty basis in the text of the Convention on Biological Diversity (CBD), it has been the consensus-based normative activity of the

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CBD Conference of the Parties (COP) that has gradually developed this multi-faceted concept into a fully-fledged system of soft-law principles and guidelines that capitalize on previous legal developments in international environmental law<sup>1</sup> but also pushes its boundaries forward significantly.<sup>2</sup>

The treaty basis for this development can rather be found in the legal concept of "ecosystem," that was introduced and defined as an object of international regulation by the CBD with a view to focusing on the dynamic interconnectedness of the variability of life on earth<sup>3</sup> and the need to actively manage, not just preserve, natural system functions for the long term.<sup>4</sup> This notion should be distinguished from that of "habitat,"<sup>5</sup> as ecosystems transcend any particular spatial scale.<sup>6</sup> It has rightly been observed, however, that while "the scientific construct of 'ecosystem' has profoundly influenced the development of domestic and international 'nature' protection programmes," its legal status in international law remains "marginal" and "uncertain" because ecosystems as such are generally not recognised as discrete objects of protection by international treaties.<sup>7</sup>

In effect, it could rather be argued that translating the scientific notion of ecosystem into a legal one has had a law-making effect.<sup>8</sup> It has provided the basis for the normative development of the ecosystem approach, which was recognised by CBD parties as early as in 1995 as the "primary framework for action" in the elaboration and implementation of thematic and cross-cutting work programmes under the Convention.<sup>9</sup> The idea of ecosystem management finds its origin in the 1990s in North America, where it emerged as an alternative to sectoral approaches to nature conservation, and as a way to integrate equity in those

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<sup>1</sup> Such as the concept of sustainable forest management: CBD Decision VII/11 (2004), para. 7.

<sup>2</sup> For instance, while the ecosystem approach as elaborated under the CBD built upon the earlier concept of wise use of wetlands of international importance, the Ramsar Convention explicitly linked its concept of wise use to the CBD ecosystem approach in 2005: Max Finlayson, Nick Davidson, Dave Pritchard, Randy Milton, and Heather MacKay, 'The Ramsar Convention and Ecosystem-Based Approaches to the Wise Use and Sustainable Development of Wetlands' (2011) 14 *JIWLP* 176, 191.

<sup>3</sup> CBD Article 2 defines ecosystem as "a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit."

<sup>4</sup> CBD Decision V/6 (2000), Annex, Principle 8.

<sup>5</sup> CBD Article 2 defines habitat as "the place or type of site where an organism or population naturally occurs."

<sup>6</sup> CBD Decision V/6, Annex, para. 3.

<sup>7</sup> Dan Tarlock, 'Ecosystems' in Dan Bodansky, Jutta Brunée & Ellen Hey (eds), *The Oxford Handbook of International Environmental Law* (OUP, 2014) 574.

<sup>8</sup> Alan Boyle and Christine Chinkin, *The Making of International Law* (OUP, 2007) 260.

<sup>9</sup> CBD Decision II/8 (1995), para. 1.

efforts.<sup>10</sup> But CBD parties soon recognised the need to elaborate and find consensus on an international notion of ecosystem approach,<sup>11</sup> which was then enshrined in two decisions adopted respectively in 2000 and 2004,<sup>12</sup> whereby the CBD COP spelt out a composite strategy. Its inter-linked elements will be analysed in turn below.

### 3. Unpacking the ecosystem approach

First of all, the ecosystem approach concerns *integration*: it is aimed at integrating the management of land, water and living resources, and balancing the three objectives of the Convention - conservation, sustainable use, and access and benefit-sharing.<sup>13</sup> In that connection, the ecosystem approach fundamentally challenges the long-embedded sectoral and fragmented approach to environmental law making and implementation at national and international levels.<sup>14</sup> Along similar lines, the ecosystem approach also aims to integrate different legal and management strategies, such as area- and species-based conservation, and combine them with other methodologies depending on local, national, regional or global conditions,<sup>15</sup> through adaptive management (discussed below). The ecosystem approach also aims to integrate modern science and the traditional knowledge of indigenous peoples and local communities in adaptive management.<sup>16</sup>

While balancing the different objectives of the CBD, the ecosystem approach prioritizes *conservation*<sup>17</sup> with a view to ensuring ecosystem functioning and resilience. It conditions sustainable use to the taking into account of the limits of ecosystem functioning<sup>18</sup> and promotes connectivity.<sup>19</sup> This is far from straightforward, however. There appears to be 'diverging and sometimes irreconcilable ideological projects' behind the ecosystem approach,

<sup>10</sup> Finlayson et al (n 2) 187. For a discussion of the history of the concept of ecosystem, see Tarlock (n 7) 577-579.

<sup>11</sup> CBD Decision IV/1 B (1998), whereby CBD parties acknowledged the need for a "workable description and further elaboration of the ecosystem approach" and gave the mandate to develop guidance in that regard.

<sup>12</sup> CBD Decisions V/6 and VII/11 (2004).

<sup>13</sup> CBD Decision V/6, Annex, para. 1 and principle 5.

<sup>14</sup> Finlayson et al (n 2), 196; Froukje Platjouw, 'The need to recognize a coherent legal system as an important element of the ecosystem approach' in Christina Voigt (ed) *Rule of Law for Nature: New Dimensions and Ideas in Environmental Law* (Cambridge University Press, 2013) 158.

<sup>15</sup> CBD Decision V/6, Annex, para. 5.

<sup>16</sup> CBD Decision V/6, Annex, Principle 11.

<sup>17</sup> Although note critical remarks by Bruce Pardy, 'Changing Nature: The Myth of the Inevitability of Ecosystem Management' (2003) 20 *Pace Envtl. L. Rev.* 675.

<sup>18</sup> CBD Decision V/6, Annex, Principles 5-6.

<sup>19</sup> CBD Decision V/6, Annex, Principle 1. Mariachiara Alberton (ed), *Toward the Protection of Biodiversity and Ecological Connectivity in Multi-Layered Systems* (Nomos, 2013).

namely anthropocentrism and 'its imbrication with capitalism,' on the one hand, and eco-centrism and its 'counter-hegemonic narratives' premised on the intrinsic value of nature, on the other.<sup>20</sup> Nonetheless, anthropocentrism may not inherently be an obstacle to environmentally sustainable development, as long as human concerns are pursued within ecological limits.<sup>21</sup> In effect, while from a normative perspective other CBD guidelines have confirmed that sustainable use needs to be implemented in the framework of the ecosystem approach,<sup>22</sup> in reality prioritizing conservation depends on establishing genuine cooperation among different stakeholders and negotiating trade-offs between human and environmental needs in a fair manner.<sup>23</sup>

Another key dimension of the ecosystem approach is, thus, its emphasis on *equity*, based on the recognition that human beings, and their cultural diversity are an integral component of many ecosystems.<sup>24</sup> From this perspective, the ecosystem approach entails a decentralized, social process. It underscores the need to understand and factor in societal choices, rights and interests of indigenous peoples and local communities, intrinsic as well as tangible and intangible values attached to biodiversity, ultimately leading to a balance between local interests and the wider public interest.<sup>25</sup> It also points to the challenge of ensuring appropriate representation of community interests in the decision-making process.<sup>26</sup> This is expected to enhance the responsibility, ownership, accountability and participation of different stakeholders in achieving the objectives of the Convention, and in facilitating the use of local knowledge. From a normative perspective, the ecosystem approach should thus be understood as a consensus-building process, that requires good faith efforts and a considerable investment of time and resources.<sup>27</sup>

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<sup>20</sup> Vito de Lucia, 'Competing Narratives and Complex Genealogies: The Ecosystem Approach in International Environmental Law' (2015) 27 JEL 91, 93-96.

<sup>21</sup> Jutta Brunnée and Stephen Toope, 'Environmental Security and Freshwater Resources: A Case for International Ecosystem Law' (1994) 5 YbIEL 41, 46-47 and 70.

<sup>22</sup> CBD Decision VII/12 (2004), Annex II.

<sup>23</sup> Finlayson et al (n 2), 192. On the latter point, Barney Dickson and Steve Edwards, *Comparing the Ecosystem Approach with Sustainable Use* (IUCN, 2004).

<sup>24</sup> CBD Decision V/6, para 2.

<sup>25</sup> CBD Decision V/6, Annex, Principle 1.

<sup>26</sup> CBD Decision VII/11, Annex I, para. 2.5.

<sup>27</sup> CBD Decision VII/11, Annex I, para 14.

From that perspective, a key element of the ecosystem approach is *benefit-sharing*,<sup>28</sup> which operates as a reward for the integration of the traditional knowledge of indigenous and local communities in planning and management, or more generally for ecosystem stewardship efforts,<sup>29</sup> such as the maintenance or restoration of ecosystem management functions.<sup>30</sup> This is based on the understanding that where local actors who control land use do not receive benefits from maintaining natural ecosystems and processes, they are likely to initiate unsustainable practices for short-term gains<sup>31</sup> and possibly break the law.<sup>32</sup> An extensive notion of benefit-sharing (that goes beyond the narrower notion related to access to genetic resources and associated traditional knowledge,<sup>33</sup> discussed elsewhere in this volume<sup>34</sup>) has thus emerged from the ecosystem approach, that has greatly influenced other areas of work of the Convention.<sup>35</sup> It implies that the State is expected to couple procedural guarantees for community participation in decision-making and management planning with substantive measures for the legal recognition of communities' sustainable practices, the provision of guidance and support to improve the environmental sustainability of community practices, and the proactive identification of opportunities for better/alternative livelihoods in these endeavours, with a view to facilitating understanding of, and compliance with, the law.<sup>36</sup> Benefit-sharing thus aims to address the equity concerns for those that devote their efforts to, and bear the risks of, the conservation and sustainable use of biodiversity, and for the larger community that benefits from conservation and sustainable use but does not pay the costs associated with them. Empirical research, however, has revealed that benefit-sharing may in practice be a 'disingenuous win-win rhetoric'.<sup>37</sup> Legal reflection seems highly necessary with

<sup>28</sup> Elisa Morgera, 'Conceptualizing Benefit-Sharing as the Pursuit of Equity in Addressing Global Environmental Challenges', BENELEX Working Paper 1 (SSRN, 2014); Elisa Morgera and Elsa Tsioumani, 'The Evolution of Benefit-sharing: Linking Biodiversity and Community Livelihoods' (2010) 20 RECIEL 150, 160.

<sup>29</sup> On the flexible and multi-dimensional concept of stewardship in environmental law, see Emily Barritt, 'Conceptualising Stewardship in Environmental Law' (2014) 26 JEL 1.

<sup>30</sup> CBD Decision V/6, para. 9.

<sup>31</sup> CBD Decision VII/11, Annex I, annotations to rationale to Principle 4.

<sup>32</sup> CBD Decision V/6, Annex B, Principle 8; and CBD Decision VII/11, Annex I, rationale to Principle 4.

<sup>33</sup> CBD Decision VII/11, Annex I, annotations to rationale to Principle 10, where reference is made to "the equitable sharing of benefits derived from the use of *biodiversity*" (emphasis added).

<sup>34</sup> See the chapters on ABS and agricultural biodiversity, and on traditional knowledge, in this volume.

<sup>35</sup> For instance, the CBD work programme on protected areas (CBD Decision VII/27 (2004) Annex; see chapter on protected areas in this volume); or CBD work programme on forest biodiversity (CBD Decision VI/22 (2002); see chapter on forest biodiversity in this volume).

<sup>36</sup> This is a synthesis of a series of CBD Decisions made in Morgera and Tsioumani (n 28) 160-165.

<sup>37</sup> Adrian Martin, Anne Akol and Jon Phillips, 'Just Conservation? On the Fairness of Sharing Benefits' in Thomas Sikor (ed), *The Justices and Injustices of Ecosystem Services* (Earthscan, 2014) 84-88.

regards to how to prevent, address and remedy the injustices that may be brought about in the name of benefit-sharing.<sup>38</sup>

#### 4. Ecosystem approach and ecosystem services

In further elaborating on the ecosystem approach, the CBD COP noted the relevance of the conceptual approach of the Millennium Ecosystem Assessment.<sup>39</sup> This<sup>40</sup> was a global scientific process that facilitated intergovernmental endorsement of the term 'ecosystem services' as the benefits people obtain from ecosystems, namely: food, water, timber, energy and fiber ('provisioning services'); 'regulating services' that affect climate, floods, diseases, wastes, and water quality; 'cultural services' that provide recreational, aesthetic, and spiritual benefits; and 'supporting services' such as soil formation, photosynthesis, and nutrient cycling. While the economic valuation of ecosystem benefits was already considered essential for more effective biodiversity conservation in early normative developments under the CBD,<sup>41</sup> the Millennium Ecosystem Assessment increased attention on the contribution of biodiversity to human well-being and to development.<sup>42</sup>

In particular, the Millennium Ecosystem Assessment led to further reflection on the need for appropriate and explicit accounting of the multiple links between biodiversity and human development, particularly through recourse to economics, to prevent other development objectives that conflict with biodiversity protection from continuing to take priority.<sup>43</sup> On the one hand, therefore, it conveyed that applying economic thinking<sup>44</sup> to the use of biodiversity could help clarify why poverty reduction depends on maintaining the flow of benefits from ecosystems and why successful environmental protection needs to be grounded in sound

<sup>38</sup> Morgera (n 28).

<sup>39</sup> CBD Decision VII/11, para 6 and Annex I,

<sup>40</sup> The Millennium Ecosystem Assessment, *Ecosystems and Human Well-Being, Synthesis* (2005), <<http://www.maweb.org/en/index.aspx>> accessed 7 April 2015. For a discussion of legal implications, see Elisa Morgera, 'The 2005 UN World Summit and the Environment: The Proverbial Half-Full Glass' (2006) 15 *Italian Y.B. Int'l L.* 53.

<sup>41</sup> Eg, CBD Decision III/18 (1996).

<sup>42</sup> Elisa Morgera and Elsa Tsioumani, 'Yesterday, Today and Tomorrow: Looking Afresh at the Convention on Biological Diversity' (2011) 21 *YbIEL* 3, 11-12.

<sup>43</sup> The Economics of Ecosystems and Biodiversity (TEEB), *Challenges and Responses* (OUP, 2014) and other materials available at <[www.teebweb.org/](http://www.teebweb.org/)> accessed 7 April 2015.

<sup>44</sup> Note increased efforts to advance the use of economic valuation to mainstreaming environmental protection more effectively into development planning have been undertaken also in the areas of climate change and desertification: Nicholas Stern, *The Economics of Climate Change: The Stern Review* (Cambridge University Press, 2007); and Economics of Land Degradation' initiative, <<http://eld-initiative.org/>> accessed 7 April 2015.



economics.<sup>45</sup> On the other hand, it encouraged a greater use of economic and market-based instruments in the management of ecosystem services, where enabling conditions exist.<sup>46</sup> In effect, the ecosystem approach already recognized the need to understand and manage ecosystems in an economic context, with a view to reducing market distortions that may affect biodiversity negatively, aligning incentives for conservation and sustainable use, and internalizing costs.<sup>47</sup>

But reference to ecosystem services raises divisive questions about the moral and cultural acceptability and the effectiveness of the pricing and marketing of ecosystem services, about inherent pressures towards their privatization, and more generally about the appropriate balance between ecosystem stewardship and ownership.<sup>48</sup> The proponents of ecosystem services, however, openly acknowledge the limitations of *monetary valuation* particularly when biodiversity values are generally recognized and accepted socially and culturally,<sup>49</sup> and have rather emphasized valuation in a broad sense in order to clearly address the drawbacks and limitations of economics as a means to achieving human well-being.<sup>50</sup> Accordingly, the international discourse on ecosystem services has also served to underscore the need for rights-based strategies to prevent biodiversity loss and its negative impacts on the vulnerable.<sup>51</sup> In addition to *vulnerability*, it drew attention to the (largely unaccounted) *merit* of ecosystem service providers in contributing to global human well-being.<sup>52</sup> As a result, the ecosystem approach embodies a balancing of economic and non-economic understandings of the relationship between humans and the environment, as well as inherent tensions in that regard, which are reflected also in the concept of benefit-sharing as the sharing of not only economic, but also socio-cultural and environmental benefits arising from biodiversity

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<sup>45</sup> TEEB (n 43), 6.

<sup>46</sup> UNEP High-Level Brainstorming Workshop on Creating Pro-Poor Markets for Ecosystem Services: 10-12 October 2005, London, UK. The whole paragraph builds upon Morgera and Tsioumani (n 42), 9-12.

<sup>47</sup> CBD Decision V/6, Annex, Principle 4.

<sup>48</sup> Colin Reid and Walters Nsoh, 'Whose Ecosystem Is It Anyway? Private and Public Rights under New Approaches to Biodiversity Conservation' (2014) 5 *Journal of Human Rights and the Environment* 112.

<sup>49</sup> TEEB (n 43), 11-12.

<sup>50</sup> *Ibid.*, 9.

<sup>51</sup> For instance, CBD Decision X/4 (2010), paras. 5(d) and (f), pointing to: enhancing the benefits from biodiversity to contribute to local livelihoods; empowering indigenous and local communities; and ensuring their participation in decision-making processes to protect and encourage their customary sustainable use of biological resources.

<sup>52</sup> Thomas Sikor, Adrian Martin, Janet Fisher and Jun He, 'Toward an Empirical Analysis of Justice in Ecosystem Governance' (2014) *Conservation Letters* doi: 10.1111/conl.12142, 4.

conservation and sustainable use.<sup>53</sup> The resolution of these tensions partly depends on further appreciation of the natural capital<sup>54</sup> and partly on the scientific basis available for decision-making, to which we now turn.

## 5. Adaptive management and the precaution principle

As our knowledge of ecosystem functioning is incomplete, the ecosystem approach is tightly linked to precaution: it is predicated on the application of appropriate scientific methodologies and on the adoption of adaptive management to deal with the complex and dynamic nature of ecosystems.<sup>55</sup> It also calls for a cautious approach in respecting the limits of ecosystem functioning.<sup>56</sup>

The precautionary principle<sup>57</sup> is the response of international environmental law to scientific uncertainty. As aptly discussed by Burns, a precautionary approach entails taking into account the vulnerability of the environment, the limitations of science, the availability of alternatives, and the need for long-term, holistic environmental considerations, thus operating as a safeguard against asymmetric information and imperfect monitoring.<sup>58</sup> Against this background, the precautionary principle may entail three types of conducts, in the face of scientific uncertainty: uncertainty does not justify inaction, uncertainty justifies action, and reversal of the burden of proof.<sup>59</sup> As opposed to the ecosystem approach, the precautionary principle has been addressed extensively by scholars<sup>60</sup> and international tribunals.<sup>61</sup> The International Court of Justice applied it as a general principle of international law,<sup>62</sup> while the

<sup>53</sup> This paragraph builds upon Morgera (n 28), 7-8.

<sup>54</sup> See chapter on Nature capital: valuation and payments for ecosystem services in this volume.

<sup>55</sup> CBD Decision V/6, Annex, paras. 2 and 4

<sup>56</sup> CBD Decision V/6, Annex, Principle 6.

<sup>57</sup> Rio Declaration on Environment and Development (12 August 1992) UN Doc A/CNF.151/26, vol 1, Annex I, Principle 15. R Cooney & B Dickson (eds) *Biodiversity and the Precautionary Principle* (Earthscan, 2005).

<sup>58</sup> William Burns, 'Potential Causes of Action for Climate Impacts under the United Nations Fish Stocks Agreement' (2007) 7 *Climate Law Reporter* 34.

<sup>59</sup> Jonathan Wiener, 'Precaution' in D Bodansky et al (n 7), 597.

<sup>60</sup> Eg: David Freestone and Ellen Hey (eds), *The Precautionary Principle and International Law: The Challenge of Implementation* (Kluwer, 1996); Ronnie Harding and Elizabeth Fisher (eds), *Perspectives on the Precautionary Principle* (Federation Press, 1999); Arie Trouwborst, *Evolution and Status of the Precautionary Principle in International Law* (Kluwer, 2002); Elizabeth Fisher Judith Jones and René von Schomberg (eds), *Implementing the Precautionary Principle* (Edward Elgar, 2006); Arie Trouwborst, *Precautionary Rights and Duties of States* (Martinus Nijhoff, 2006); and Joakim Zander, *The Application of the Precautionary Principle in Practice* (CUP, 2010).

<sup>61</sup> Caroline Foster, *Science and the Precautionary Principle in International Courts and Tribunals* (CUP 2011).

<sup>62</sup> International Court of Justice, *Case concerning Pulp Mills on the River Uruguay (Argentina v Uruguay)*, Judgment (20 April 2010), para. 164.

International Tribunal on the Law of the Sea pointed to a 'trend towards making [precaution] part of customary international law.'<sup>63</sup>

With specific regard to international biodiversity law, the precautionary principle is encapsulated in the preamble of the CBD<sup>64</sup> and has played a significant role in the development of the Convention, notably in the area of biosafety.<sup>65</sup> It has also motivated the adoption of key decisions related to new and emerging threats to biodiversity, such as soft-law moratoria on genetic use restriction technologies,<sup>66</sup> genetically modified trees,<sup>67</sup> ocean fertilization,<sup>68</sup> and geo-engineering.<sup>69</sup>

Beyond these specific instances, however, the precautionary approach applies systematically to international biodiversity law through adaptive management.<sup>70</sup> As a 'new legal paradigm',<sup>71</sup> adaptive management is premised on an ongoing learning process: responding to changing circumstances and new knowledge, as well as generating new knowledge and reducing uncertainties, thereby allowing management to anticipate and cater for change.<sup>72</sup>

Few legal scholars have reflected on the interaction between the ecosystem approach and the precautionary principle in light of adaptive management. Trouwborst emphasized that both embody responses to the failure of reactive and fragmented approaches to environmental protection, and mandate similar implementing measures that should be tailor-made and readily adaptable.<sup>73</sup> Trouwborst, however, calls for taking into account the ecosystem approach in the application of the precautionary principle, when the latter addresses broader environmental issues than ecosystem integrity.<sup>74</sup> Tarlock, in effect, argued that adaptive

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<sup>63</sup> International Tribunal for the Law of the Sea, *Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area (Request for Advisory Opinion submitted to the Seabed Disputes Chamber)*, Advisory Opinion (1 February 2011), para. 135.

<sup>64</sup> CBD preamble reads: "Aware of the general lack of information and knowledge regarding biological diversity and of the urgent need to develop scientific, technical and institutional capacities to provide the basic understanding upon which to plan and implement appropriate measures."

<sup>65</sup> See chapter on biosafety in this volume.

<sup>66</sup> CBD Decision V/5 (2000), para. 23.

<sup>67</sup> CBD Decision IX/5 (2008), para 1(s).

<sup>68</sup> CBD Decision IX/16 C (2008), para. 4.

<sup>69</sup> CBD Decision X/33 (2010), para. 8(w).

<sup>70</sup> CBD Decision VII/11, Annex I, Principle 6, Implementation Guideline 6.2.

<sup>71</sup> Tarlock (n 7) 581.

<sup>72</sup> CBD Decision VII/11, Annex I, Annotations to the Rationale of Principle 9.

<sup>73</sup> Arie Trouwborst, 'The Precautionary Principle and the Ecosystem Approach in International Law: Differences, Similarities and Linkages' (2009) 18 RECIEL 26, 36.

<sup>74</sup> *Ibid.*, 33-34.

management 'corrects the bias [of the precautionary principle] towards no action in the face of uncertainty and the opposite bias for immediate fixes unconnected to long-term monitoring, assessment and adjustment to changed conditions and information. Brunnée and Toope, in turn, caution against injecting cost-effectiveness, as part of the precautionary principle, into the ecosystem approach, arguing that cost-effectiveness could serve as a 'normative backdoor for business as usual.'<sup>7576</sup>

## 6. Ecosystem approach and mutual supportiveness

The ecosystem approach has provided a conceptual and normative basis for the CBD COP to address questions arising in other international environmental agreements, thereby serving to ensure mutual supportiveness among them,<sup>77</sup> as well as with international human rights law.<sup>78</sup> The case of the CBD COP normative activity on climate change<sup>79</sup> provides an exemplary illustration in this regard.<sup>80</sup> For instance, CBD Parties committed to designing and implementing climate change mitigation activities by ensuring opportunities for the active participation of indigenous and local communities in accordance with the Akwé: Kon Voluntary Guidelines on environmental and socio-cultural impact assessment.<sup>81</sup> In addition, the CBD COP recommended assessing the impacts of climate change on the biodiversity-based livelihoods of indigenous and local communities, with a view to identifying adaptation priorities.<sup>82</sup> These and other related normative developments under the Convention have arguably garnered intergovernmental support for a human right-based approach to climate change, by systematically factoring in the role and interests of indigenous and local communities.<sup>83</sup>

<sup>75</sup> Brunnée and Toope (n 21), 69.

<sup>76</sup> Tarlock (n 7) 581-582.

<sup>77</sup> Riccardo Pavoni, 'Mutual Supportiveness as a Principle of Interpretation and Law-Making: A Watershed for the WTO-and-Competing-Regimes Debate?' (2010) 21 *EJIL* 649

<sup>78</sup> Elisa Morgera, 'Against All Odds: The Contribution of the Convention on Biological Diversity to International Human Rights Law' in Denis Alland, Vincent Chetail, Olivier de Frouville, and Jorge Viñuales (eds), *Unity and Diversity of International Law* (Martinus Nijhoff, 2014) 983.

<sup>79</sup> See chapter on climate change in this volume.

<sup>80</sup> CBD Decision VII/15 (2004), para. 8.

<sup>81</sup> Akwé: Kon Voluntary Guidelines for the Conduct of Cultural, Environmental and Social Impact Assessment regarding Developments Proposed to Take Place on, or which are Likely to Impact on, Sacred Sites and on Lands and Waters Traditionally Occupied or Used by Indigenous and Local Communities, CBD Decision VII/16C (2004), Annex.

<sup>82</sup> CBD Decision X/33 (2010), para. 8(b).

<sup>83</sup> This argument is fully explored in Elisa Morgera, 'No Need to Reinvent the Wheel for a Human Rights-Based Approach to Tackling Climate Change: The Contribution of International Biodiversity Law' in Erkki Hollo, Kati Kulovesi and Micheal Mehling (eds), *Climate Change and the Law* (Springer, 2013) 350.

A more thorough assessment of the role of the ecosystem approach to mutual supportiveness is yet to be carried out. Related questions have been addressed in the on international watercourses<sup>84</sup> and oceans law.<sup>85</sup> But the degree to which the CBD had influenced other international regimes in this regard remains to be fully evaluated, in light of the assertion made in other fora that no single universally agreed definition of ecosystem approach exists.<sup>86</sup>

## 7. Conclusions

The ecosystem approach, as developed under the CBD, is a composite strategy that fundamentally challenges traditional regulatory approaches. It has emerged from an evolving interpretation of the CBD, and has then contributed to it, as well as to that of other international biodiversity conventions. It has also allowed for a mutual supportive consideration of other areas of international law, such as climate change and human rights, under the Convention.

When compared to the rich scholarly reflection on the precautionary principle, however, the scarcity of legal literature on the ecosystem approach is glaring. Three overarching areas for future legal research can be singled out. First, from a theoretical perspective, should the ecosystem approach be included among the principles of international environmental law? The catalogue of these principles is classically based on the 1992 Rio Declaration,<sup>87</sup> which

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<sup>84</sup> Eg Owen McIntyre, 'The Emergence of an 'Ecosystem Approach' to the Protection of International Watercourses under International Law' (2004) 13 *RECIEL* 1; Owen McIntyre, 'The Protection of Freshwater Ecosystems Revisited: Towards a Common Understanding of the 'Ecosystem Approach' to the Protection of Transboundary Water Resources' (2014) 23 *RECIEL* 88; and Alistair Rieu-Clarke and Chris Spray, 'Ecosystem Services and International Water Law: Towards a More Effective Determination and Implementation of Equity?' (2013) 16 *Potchefstroom Electronic Law Journal* 12.

<sup>85</sup> Scott Parsons, 'Ecosystem Considerations in Fisheries Management: Theory and Practice' (2005) 20 *IJMCL* 381; Adriana Fabra and Virginia Gascon, 'The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) and the Ecosystem Approach' (2008) 23 *IJMCL* 567; Hanling Wang, 'Ecosystem Management and Its Application to Large Marine Ecosystems: Science, Law, and Politics' (2004) 35 *ODIL* 41-74; and Daniela Diz, *Fisheries Management in Areas beyond National Jurisdiction: The Impact of Ecosystem Based Law-making* (Brill, 2013).

<sup>86</sup> Report of the work of the UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea at its Seventh Meeting (17 July 2006) UN Doc A/61/156, para 42.

<sup>87</sup> Eg, Philippe Sands and Jaqueline Peel, *Principles of International Environmental Law* (CUP, 2012) 187-237. This may explain why the major textbooks devote very little attention to the ecosystem approach: Patricia Birnie, Alan Boyle and Catherine Redgwell, *International Law and the Environment* (OUP, 2009) do not index "ecosystem approach"; Ulrich Beyerlin and Thilo Marauhn, *International Environmental Law* (Hart, 2011) indexed a section on habitat protection as "ecosystem approach"; and Alexander Gillespie, *Conservation*,

does not refer to the ecosystem approach as such, but includes several, now widely shared,<sup>88</sup> principles that are connected to the ecosystem approach, such as precaution, sustainable development and inter-generational equity.<sup>89</sup> Second, from a pragmatic perspective, considering inherent tensions between economics and ecology captured by the notion of ecosystem services,<sup>90</sup> what legal guarantees are necessary for the ecosystem approach to realize equity in addressing interconnected, multi-scalar environmental challenges? Third, from a normative perspective, is the ecosystem approach transforming international environmental law into "international ecosystem law," as posited by Brunnée and Toope?<sup>91</sup> In other words, has the ecosystem approach helped shift the focus of international environmental law away from the sovereign interests of States, towards short- and long-term ecosystem integrity needs?

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*Biodiversity and International Law* (Edward Elgar, 2012) devotes a couple of pages to it (483-484).

<sup>88</sup> Jorge Viñuales (ed), *The Rio Declaration on Environment and Development: A Commentary* (OUP, 2015).

<sup>89</sup> Jutta Brunnée & Stephen Toope, 'Environmental Security and Freshwater Resources: Ecosystem Regime Building' (1997) 91 AJIL 26.

<sup>90</sup> See generally Sikor (n 37).

<sup>91</sup> Brunnée and Toope (n 21).

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